

12 HARTWOOD GARDENS
WATERLOOVILLE

ARBORICULTURAL
IMPACT
ASSESSMENT
&
METHOD
STATEMENT

ACD

Ecology

Arboriculture

Landscape Architecture

PREPARED BY
ACD
ARBORICULTURE

FOR
MR. P WHEELER

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Checked by:	A Bigg
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1. EXECUTIVE SUMMARY

- 1.1. It is proposed to replace the current conservatory with a ground floor extension and conservatory. The layout can be seen on the appended tree protection plan (TPP) and will fall within the approximate dimensions agreed with the tree officer during negotiations on site.
- 1.2. The proposed construction passes through the and root protection area of the oak. It is likely that there are some roots beneath the patio, and therefore, to avoid root damage a no-dig approach must be taken, limiting the impact on the tree. BS5837 recommends a standard approach for such situations: a raised slab floor, suspended upon piles.
- 1.3. The proposed layout is in line with recommendations of the British Standard BS5837:2012. Adequate protection can be provided to ensure all retained trees are protected throughout development.
- 1.4. Some site supervision will be required during the construction work.

2. INTRODUCTION

- 2.1. Mr. P Wheeler instructed ACD Arboriculture in January 2014 to prepare the following impact assessment.
- 2.2. Following the recommendations of BS5837:2012 Trees in relation to design, demolition and construction- Recommendations, this report includes the necessary information to support a planning application. It demonstrates that the impact, both direct and indirect, of the proposed development within the site, has been assessed and where appropriate, mitigation and tree protection proposed.
- 2.3. The implementation of the protection methods and special construction details recommended within this report are critical for ensuring the retained trees are successfully protected through the construction process and must be implemented prior to any work on site.
- 2.4. This assessment is based upon the supplied layout drawing.
- 2.5. This assessment considers the impact of the development on the constraints posed by the retained trees (both beneath ground: the root protection area (RPA), and above ground: the canopy).
- 2.6. Direct impact from development comes in six main forms: 1) Surface installation within RPAs, 2) Root loss from excavation for foundations, drainage and other utilities within RPAs, 3) Soil stripping, removal and level changes within RPAs, 4) Excessive access facilitation pruning to retained trees, 5) Soil compaction from storage and vehicle movements within RPAs, 6) Soil contamination.
- 2.7. Indirect impact can come from changes to the site hydrology, future pressure to prune or fell, failure of trees exposed by removal of neighbouring trees, and other environmental changes which can take several years to manifest.
- 2.8. Root protection areas represent a minimum area in m² that should be left undisturbed around each retained tree. This is initially represented by a circle but is often adjusted to account for constraints to root growth within the site (primarily highways and buildings). It is therefore important to ensure the protection of trees both above and below ground. Recommendations are provided in the British Standard as to the protection of existing trees before, during and after development. This is achieved by ensuring the tree protection plan and arboricultural method statement are implemented before any commencement on site.

3. ARBORICULTURAL IMPACT ASSESSMENT

3.1. OVERVIEW OF PROPOSED DEVELOPMENT

3.1.1. It is proposed to replace the current conservatory with a ground floor extension and conservatory. The layout can be seen on the appended tree protection plan (TPP) and will fall within the approximate dimensions agreed with the tree officer during negotiations on site.

3.2. TREE DETAILS

3.2.1. The only tree near the area of development is an English Oak (*Quercus robur*). It has a stem diameter of 650mm and a crown spread as shown on the plan. This stem size results in a root protection area of about 7.8m radius from the centre of the stem. This RPA is shown on the TPP.

3.3. TREE PRESERVATION ORDER/CONSERVATION AREA

3.3.1. The tree is covered by an old Havant Borough Council Tree Preservation Order No. 1357.

3.4. PREVIOUS PLANNING APPLICATIONS AND CONSENT

3.4.1. There are no relevant past applications or extant planning consents for this site.

3.5. DEMOLITION, SITE CLEARANCE & ARCHAEOLOGY

3.5.1. The existing patio should be removed under arboricultural supervision, ground protection laid to cover the exposed ground, as shown on the Tree Protection Plan and this retained during demolition of the conservatory.

3.5.2. Once demolition has finished, the ground protection can be set back to allow piling to commence.

3.6. CONSTRUCTION WITHIN RPAS

3.6.1. The proposed construction passes through the root protection area of the oak. It is likely that there are some roots beneath the patio, and therefore, to avoid root damage a no-dig approach must be taken, limiting the impact on the tree. BS5837 recommends a standard approach for such situations: a raised slab floor, suspended upon piles. To minimise impact on any roots, and remove the need for a piling mat, mini-piles are to be used. This will ensure a low impact piling rig is required. A standard detail is included within the method statement section of this report, but the final design must be designed by an engineer and approved for use by the project arboriculturist.

3.7. ACCESS AND WORKING ROOM WITHIN RPAS

3.7.1. Space is required for working room within the RPA of the oak. Following the recommendations of 6.2.3 of the British Standard, ground protection will be employed to retain the underlying soil structure and avoid detriment to roots. This must be installed as per the method statement, and signed off by the project arboriculturist prior to the start of any work.

3.7.2. It must be installed prior to demolition, and then moved back during piling to allow construction of the raised slab floor.

3.8. PROTECTION FENCING

3.8.1. No protective fencing is required. The entire RPA will be protected using ground protection to allow room for construction.

3.9. SHADE AND FUTURE PRESSURE TO PRUNE

3.9.1. ACD have worked with the design team on this project and we feel that the resulting proposed layout is both sustainable and results in juxtapositions between trees and buildings which will not bring future requests for excessive pruning and/or tree removal.

3.9.2. It meets the general guidelines given by the tree officer during initial site visit and informal discussion.

4. ARBORICULTURAL METHOD STATEMENT

TO BE READ INCONJUNCTION WITH THE APPENDED TREE PROTECTION PLAN REF: PRI18880-03

4.1. PHASING OF OPERATIONS & SITE SUPERVISION

4.2. The tree protection and other arboriculturally related works must be carried out in the following order:

- 1) Remove patio by hand
- 2) Ground protection installed
- 3) Demolition of conservatory
- 4) Install piles, adjusting ground protection as necessary
- 5) Remove demolition ground protection
- 6) Install slab floor
- 7) Construction phase (with ground protection retained)

4.3. Supervision from the project arboriculturist is required for the operations listed in the table below:

Operation	Present	Time
Pre-start meeting	ACD Site manager Groundwork foreman Demolition foreman	After installation of ground protection & prior to any demolition
Installation of piles	ACD Groundwork staff	T.B.C
Installation of slab floor	ACD Groundwork staff	T.B.C

4.4. It is also essential that should the need for any unplanned access and/or work be required in the construction exclusion zone, that this is done under arboricultural supervision, and that the Local Planning Authority are made aware.

4.5. Supervision will require the arboriculturist to be present throughout the task, to ensure all the arboricultural objectives are met. If the task is to take a long period of time, provided the arboriculturist is satisfied, and after an initial 'tool-box talk', the supervision may be reduced to telephone contact between the site foreman/contractor and arboriculturist.

4.6. TREE PROTECTION AREAS

4.6.1. Based on tree survey data, a tree protection area have been determined for the retained tree. This area is designed to protect at least a functional minimum of tree root mass in order to ensure that the tree survives the construction process.

4.6.2. It is the responsibility of everyone engaged in the construction process to respect the tree protection measures and observe the necessary precautions within and adjacent to them.

4.6.3. Inside the exclusion area of the fencing, the following shall apply:

- No mechanical excavation whatsoever
- No excavation by any other means without arboricultural site supervision
- No hand digging without a written method statement having first been approved by the project arboriculturist.
- No lowering of levels for any purpose (except removal of grass sward using hand tools)
- No storage of plant or materials
- No storage or handling of any chemical including cement washings
- No vehicular access
- No fire lighting

4.6.4. In addition to the above, further precautions are necessary adjacent to trees:

- No substances injurious to tree health, including fuels, oil, bitumen, cement (including cement washings), builders sand, concrete mixing and other chemicals shall be stored or used within or directly adjacent to the protection area of retained trees
- No fire shall be lit such that flames come within 5m of tree foliage.

4.7. GROUND PROTECTION

4.7.1. The ground protection to be installed before demolition in the location shown on TPP must be capable of supporting the expected loads and avoiding rutting, compaction and damage to the soil: as advised in section 6.2.3 of the British Standard.

4.7.2. Stages for ground protection installation:

- 1) No plant machinery to be used in the area of ground protection for whatever reason
- 2) Discuss procedure with project arboriculturist
- 3) Any shrubs, saplings or trees to be removed, are to be cut, or ground out to just below ground level rather than grubbed or winched out, which can damage roots of retained trees.
- 4) Lay woven geotextile over existing ground surface by hand
- 5) Cover the area with compressible layer, woodchip for example, using hand tools only
- 6) Cover compressible layer with side butting scaffold boards or plywood boards
- 7) Confirm surface is acceptable for use with project arboriculturist

8) Area ready for construction access

4.7.3. Any scaffolding required within the area will be erected with the uprights placed on spreader boards.

4.7.4. The boarding will be left in place until the construction works are finished.

4.7.5. A single thickness of boarding laid on the soil surface will provide sufficient protection for pedestrian loads. However, for wheeled or tracked construction traffic movements within the RPA, ground protection will involve the use of temporary cellular confinement systems, reinforced concrete slabs or track-board systems details of which are to be specified by the project engineer and approved for use by the project arboriculturist and local authority before construction commences.

4.7.6. Track-boards can be sourced from Trakmats Europe Ltd, 0845 6435388, www.trakmatseurope.com, or groundguards.com

4.7.7. There is to be no-excavation within ground protection area whatsoever. This includes installation of services and associated utilities.

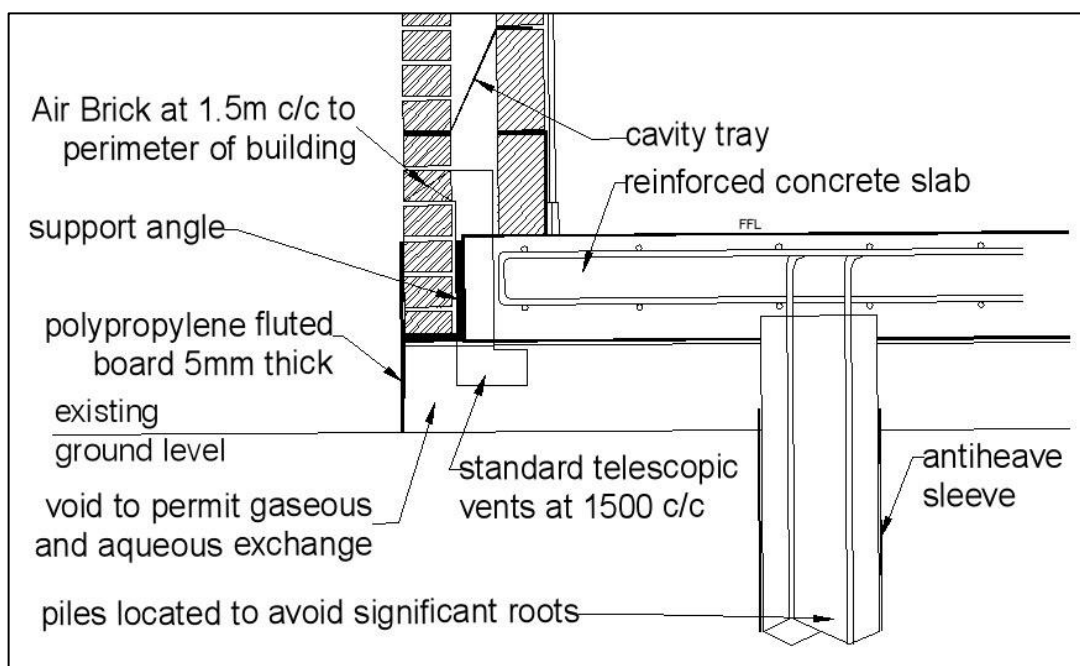
4.8. SITE STORAGE, PARKING, WELFARE FACILITIES, ETC.

4.8.1. The site will require provision for; site storage, contractor parking, welfare facilities, temporary services/drainage, material drop of points, etc.

4.8.2. None of the above provisions will be sited within RPAs of the retained tree without the input or the project arboriculturist and the consent of the Local Authority.

4.9. NO-DIG BUILDING CONSTRUCTION

4.9.1. Structure to be installed as per engineers approved specification.



Indicative section of no-dig construction

4.9.2. Stages for construction:

- 1) Contact project arboriculturist to hold pre-start site meeting and 'toolbox' talk before starting work
- 2) Adjust ground protection to allow piling rig access to pile locations
- 3) Piles installed using mini-rig with very low ground pressure: rig must be approved for use by project arboriculturist.
- 4) Void form material installed.
- 5) Slab base cast onto void form material.
- 6) Void form material removed to create void under slab
- 7) Remaining construction built on slab with no further excavation.
- 8) TPF to be re-erected in secondary position.

4.9.3. This specification must be designed to meet the following performance criteria:

- Construction will be above current ground (removal of grass sward/leaf litter by hand only).
- It will provide adequate resistance to applied loads, avoiding compaction of the soil.
- Provision will also be made for resistance to or tolerance of deformation by tree roots
- Allowance will be made for oxygen diffusion according to seasonal demand
- Water throughput to meet seasonal demand will also be possible (can be achieved by redirection of captured rainwater into hand dug land drains)

4.9.4. No plant machinery can be sited within the RPA. The use of back-acters or diggers to deposit construction materials within the area is acceptable, provided this can be achieved without causing damage to the trees canopy, and only under arboricultural supervision. The exception to this rule is when the use of piling rigs is required. In most cases it will not be possible to site a normal sized rig under the trees canopy and a 'mini rig' will be required. To facilitate use of such a rig within the RPA without causing soil compaction, ground protection must be used. This can be in the form of large metal plates or trackway placed on a substantial compressible layer (for example: woodchips).

4.9.5. Arboricultural supervision will be employed during all work within the RPA

4.9.6. Contamination of the soil by fuel and lubricant leaks must be avoided at all cost. If such a situation arises the project arboriculturist must be notified to assess the situation and prescribe remedial measures.

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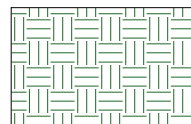
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APPENDIX: TREE PROTECTION PLAN

PRI18880-03

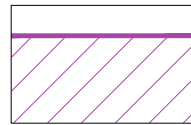
WHY TREE PROTECTION IS NEEDED

- 1) **Soil compaction kills roots-** caused by plant movement and storage of materials within protected areas.
 - 2) **Trenching severs roots-** many small roots grow within the top 600mm of soil. Even the removal of the top 200mm can cause damage.
 - 3) **Soil pollution kills roots-** Dripping fuel storage or cement washings can contaminate the soil resulting in root death.
 - 4) **Raising & lowering levels kills roots-** the soil used to increase levels can compact the underlying soil (see point 1). Lowering levels will remove roots causing damage to the tree.
 - 5) **Bark and branch damage-** bark removal and branch damage can allow disease and fungi into the tree.
- The impact of any of the above can take years to show- trees can have huge reserves of food and water.



GROUND PROTECTION WITHIN ROOT PROTECTION AREAS
The area shown is within the root protection area for the protected tree(s). To allow construction access, and to protect the soil from compaction, the following must be installed:

- a) For pedestrian movements only, a single thickness of scaffold boards should be placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100 mm depth of woodchip), laid onto a geotextile.
- b) For pedestrian operated plant up to a gross weight of 2 t, proprietary, inter-linked ground protection boards should be placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geotextile.
- c) For wheeled or tracked construction traffic exceeding 2 t gross weight, an alternative system (e.g. pre-cast reinforced concrete slabs) should be employed to an engineering specification designed in conjunction with arboricultural advice to accommodate the likely loading to which it will be subjected.



GROUND PROTECTION DURING DEMOLITION
To be installed as per the specification above prior to any work on site. To be removed after demolition, and immediately before the piling for the 'no-dig' floor.



ROOT PROTECTION AREA (RPA) FOR RETAINED TREE

RESTRICTIONS WITHIN TREE PROTECTION AREAS

- Inside the exclusion area of the fencing, the following shall apply:
- No mechanical excavation whatsoever
 - No excavation by any other means without arboricultural site supervision
 - No hand digging without a written method statement having first been approved by the project arboriculturist.
 - No lowering of levels for any purpose (except removal of grass sward using hand tools)
 - No storage of plant or materials
 - No storage or handling of any chemical including cement washings
 - No vehicular access
 - No fire lighting
- In addition to the above, further precautions are necessary adjacent to trees:
- No substances injurious to tree health, including fuels, oil, bitumen, cement (including cement washings), builders sand, concrete mixing and other chemicals shall be stored or used within or directly adjacent to the protection areas of retained trees
 - No fire shall be lit such that flames come within 5m of tree foliage.

PHASING & SUPERVISION OF DEVELOPMENT

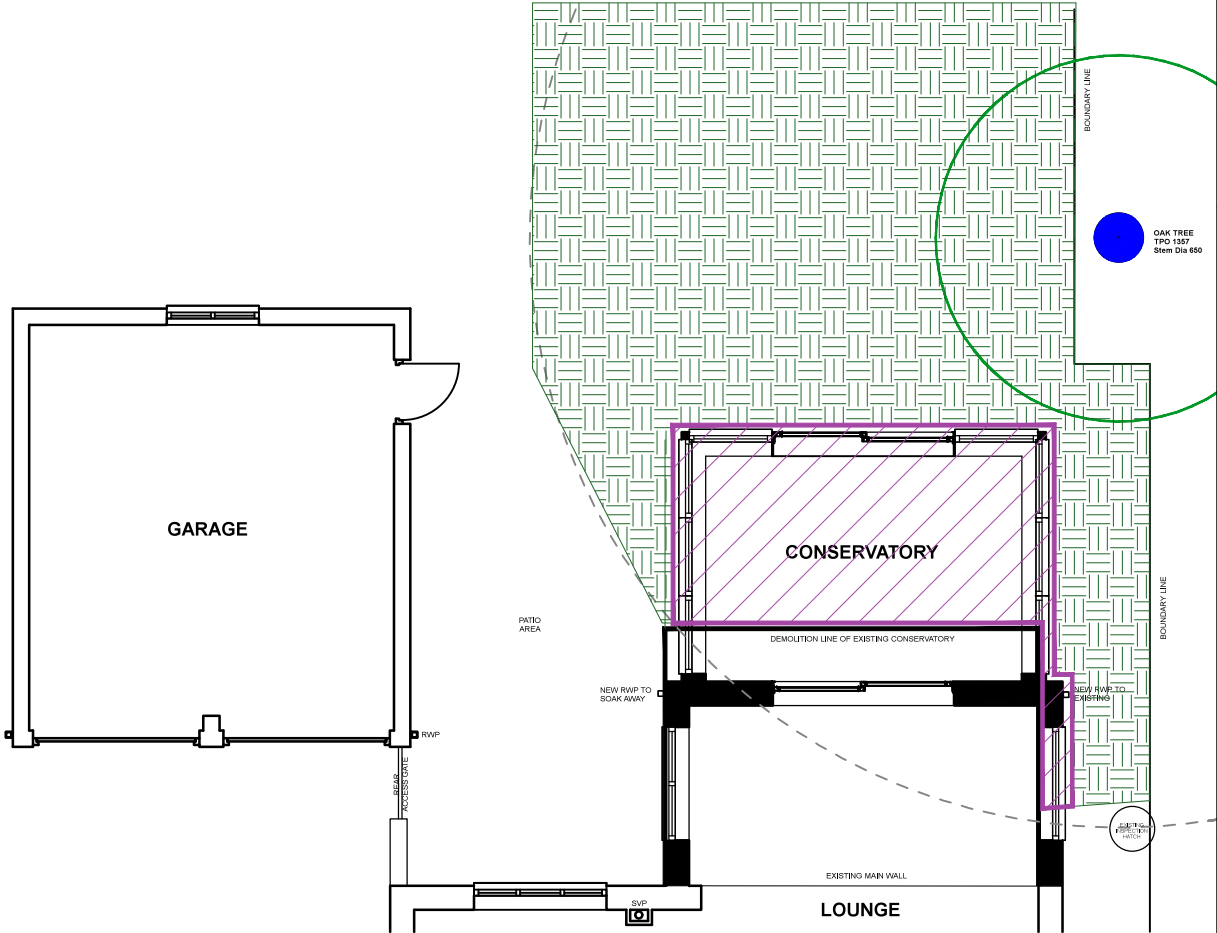
Before any work starts on site, the ground protection measures shown on this plan are to be installed and a pre-start site meeting with the project arboriculturist, groundwork contractors, site manager and LPA arboricultural officer/landscape officer held.

Tree protection to be phased as follows:

- 1) Remove patio by hand
- 2) Ground protection installed
- 3) Demolition of conservatory
- 4) Install piles, adjusting ground protection as necessary
- 5) Remove demolition ground protection
- 6) Install slab floor
- 7) Construction phase (with ground protection retained)

Supervision is also required should any unplanned access and/or work be required in the construction exclusion zone

THE TREE NEXT TO THIS SITE IS COVERED BY STATUTORY PROTECTION. DAMAGE TO IT MAY RESULT IN PROSECUTION



The original of this drawing was produced in colour- a monochrome copy should not be relied upon.



Rev	Date	Details	Drawn
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